REMARKS

The Office Action dated February 25, 2004 has been received and carefully noted. The following remarks are submitted as a full and complete response thereto. Claims 5-23 and 36-48 are respectfully submitted for consideration.

As a preliminary matter, the Office Action indicated that claims 24-35 are allowed. Applicants wish to thank the Examiner for indicating the allowance of these claims. Claims 8-15, 19-23, 38-40, and 42-44 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 5-7, 16-18, 36, 37, and 41 were rejected under 35 U.S.C. 102(e) as being anticipated by Lee (U.S. Patent No. 6,538,869). The rejection is respectfully traversed for the following reasons.

Claim 5 recites an apparatus including a network node that executes a series of scheduling cycles in order to allocate switching or routing bandwidth within a networking system. A highest speed grade is identified for a highest amount of allocated bandwidth. Lower speed grades are identified for speeds that are less than the highest amount of allocated bandwidth. Each of the scheduling cycles is divided into equal amounts of data, and each of the speed grades has a respective bandwidth allocation associated with a respective length of time. The length of time is one of the scheduling cycles for the bandwidth allocation for the highest speed grade. The length of time is more than one of

the scheduling cycles for each bandwidth allocation for the lower speed grades. The lower speed grades and the highest speed grade are serviced by the node.

Claim 16 recites a method for allocating bandwidth. The method includes identifying a highest speed grade for a highest amount of allocated bandwidth, identifying lower speed grades for speeds that are less than the highest amount of allocated bandwidth, dividing each of the scheduling cycles into equal amounts of data, and providing each of the speed grades with a respective bandwidth allocation associated with a respective length of time. Each bandwidth allotment is provided one of the amounts of data per unit of time. The length of time is one of the scheduling cycles for the bandwidth allocation for the highest speed grade. The length of time is more than one of the scheduling cycles for each bandwidth allocation for the lower speed grades. The lower speed grades and the highest speed grade are serviced.

Claim 36 recites a method for executing a scheduling cycle. The method includes distributing to each of one or more highest speed grade ports, while counting, permission to release one of equal amounts of data. The method further includes distributing to each of one or more lower speed grade ports, while continuing the counting, permission to release one of the equal amounts of data until the counting has counted across a counting modulo. Each of the lower speed grade ports consumes less bandwidth than each of the one or more highest speed grade ports. The counting modulo establishes a temporal width of the scheduling cycle that results in one of the equal amounts of data per

scheduling cycle being the amount of bandwidth allocated to each of the one or more highest speed grade ports.

One embodiment of the claimed invention includes a networking transport layer which has a packet processing pipeline, output packet organizer, and a packet buffer. Packets arriving from the service provider's network are stored into the packet buffer from the packet aggregation layer. The packet aggregation layer also forwards to the pipeline a packet identifier that acts as reference to the packet being stored in the packet buffer memory. The operation of the pipeline and the output packet organizer affects when the packet will be removed from packet buffer memory to the packet aggregation layer.

In various embodiments, the packet processing pipeline: identifies which user the packet is to be sent to, understands the output rate and priority applicable to the packet in order to release it from the networking/transport layer at a time that is appropriate for the particular user, and enters the packet identifier into the output packet organizer. The placement of a packet identifier into a specific location within the output packet organizer affects when the packet will be released from the packet buffer. The output packet organizer has locations that correspond to the time at which a packet is released from the packet buffer. When a packet identifier within the output packet organizer is processed, the release of the associated packet from the packet buffer is triggered.

Lee fails to disclose or suggest all the elements of the claims, and therefore fails to provide the advantages discussed above.

Lee discloses a protection switch architecture for a digital cross-connect system which has a main controller, a command interface, and at least one digital signal processing unit. The digital signal processing unit includes one or more signal processing service devices and one or more signal processing protection devices that correspond to the service devices. A unit controller includes the new protection switch of the invention for switching signal processing responsibilities between the service devices and the protection devices. The protection switch is adapted to act independently of the main controller in response to autonomous protection requests from the service devices by completing all protection switching related to such protection requests without main controller involvement.

Lee does not disclose or suggest executing a series of **scheduling cycles** in order to allocate switching or routing bandwidth, as recited in independent claims 5 and 16. The Office Action refers to Figure 1, box 2 and Column 3, lines 56-59 of Lee as teaching this element of the claim. However, these sections of Lee make no mention of "executing a series of scheduling cycles in order to allocate switching or routing bandwidth within a network system." Rather Lee simply discloses that incoming signals are de-multiplexed into lower level signals (Lee, Column 4, lines 15-17). In fact, Lee does not appear to disclose any type of scheduling cycle. Scheduling is a process that organizes the forwarding of one or more packets within a node to a particular user. Lee fails to disclose such a process.

Lee also fails to disclose or suggest that "the highest speed grade is identified for a highest amount of allocated bandwidth, and wherein lower speed grades are identified for speeds that are less than the highest amount of allocated bandwidth," which is recited in claim 5. Applicants note that claim 16 contains a similar limitation. The Office Action cites Figure 1: STS-3, STS-1, and DS1/DS0 as disclosing the above-stated element of claims 5 and 16. STS-3, STS-1 and DS1/DS0, however, are simply SONET signal formats and do not disclose identifying a highest active speed grade or lower speed grades. Therefore, Lee fails to disclose or suggest this element of the claim.

Additionally, Lee fails to disclose dividing the scheduling cycles into equal amounts of data wherein each of the speed grades has a respective bandwidth allocation associated with a respective length of time, as recited in claims 6 and 15, and shown in figure 3. Specifically, the claimed invention recites a scheduling technique that partitions each scheduling cycle according to the highest speed grade managed by the node (Specification, Paragraph 0037, lines 1-2). Lee discloses the number of DS0 signals an OC-3 can carry, and de-multiplexing STS-3 into three STS-1 and further into DS-1 and DS-0 signals (Lee, Column 4, lines 21-22 and lines 33-37). However, Lee clearly fails to disclose or suggest that scheduling cycles are divided into equal amounts of data. Consequently, Lee does not disclose or suggest all of the elements of independent claims 5 and 16.

Applicants note that the discussion in Lee and Newton, which discloses that 2 Oc-3 connections can carry up to 4096 signals (Office Action, page 5) is part of the ANSI

T1.105 specification. Applicants are not claiming any portion of the ANSI T1.105 specification in the pending application.

Lee also fails to disclose all of the elements of independent claim 36. Lee does not disclose distributing permission to release one of equal amounts of data, nor does Lee disclose the limitation of counting. In addition, Lee fails to disclose the limitation of "the counting modulo establishing a temporal width of the scheduling cycle that results in one of the equal amounts of data per scheduling cycle being the amount of bandwidth allocated to each of the one or more highest speed grade ports," which is recited in claim 36.

Applicants submit that claims 6-7, 17-18, 37 and 41 are dependent upon claims 5, 16, and 36 respectively. Therefore, claims 6-7, 17-18, 37 and 41 should be allowable for at least their dependence on claims 5, 16, and 36, and the specific limitations recited therein.

Claims 45-48 were rejected under 35 U.S.C. 102(e) as being anticipated by Miyamoto (U.S. Patent No. 6,618,381). The rejection is respectfully traversed for the reasons which follow.

Claim 45 recites a method for scheduling in a network node. The method includes: (a) setting an active speed grade to a highest speed grade; (b) servicing as much as possible of a servicing circle of the active speed grade until a count for the highest speed grade has timed out; (c) if the servicing circle of the active speed grade has been fully serviced and the count for the highest speed grade has not timed out, then setting the

active speed grade to a lower speed grade that is a highest speed grade having a servicing circle that has not been fully serviced and going to operation (b) and repeating; (d) if the count for the highest speed grade has timed out, then setting the active speed grade to the highest speed grade that has not timed out and going to operation (b) and repeating.

Miyamoto discloses an ATM network system connecting a source terminal equipment to a destination terminal equipment through a plurality of ATM communication nodes by the SVC method wherein the priority levels for the UBR communication connection can be easily layered. In the source ATM communication node, a priority level definition table is preset with priority levels for the SVC whose service category is the UBR service per a physical port, MAC address, or IP address, a control unit transmits a SETUP message including the priority levels, a switch controller controls a readout level of a user's information cell based on the priority levels. Having received the SETUP message in each of the ATM communication nodes, the switch controller controls a readout level of the user's information cell based on the priority levels included in the SETUP message.

With respect to claim 45, Miyamoto does not disclose the limitation "until a count for the highest speed grade has timed out" recited in operation (b) of claim 45. Miyamoto fails to disclose maintaining a count. In addition, Miyamoto does not disclose operation (c) of claim 45 which recites "if the servicing circle of the active speed grade has been fully serviced and the count for the highest speed grade has not timed out, then setting the active speed grade to a lower speed grade that is a highest speed grade having

a servicing circle that has not been fully serviced and going to operation (b) and repeating."

Applicants note that claims 46-48 are dependent upon claim 45. Therefore, applicants respectfully submit that claims 46-48 should be allowable for at least their dependence on claim 45, and the specific limitations recited therein.

Applicants respectfully submit that the cited prior art reference of Lee and Miyamoto fail to disclose or suggest critical and important elements of the claimed invention. These distinctions are more than sufficient to render the claimed invention unanticipated and unobvious. It is therefore respectfully requested that all of claims 5-23 and 36-48 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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